

## Identity of Electricities

### 23

and broken, expansion of the air within the instrument occurred, indicating an increase,, at the moment,, of the temperature of the wire.

81. ii. *Magnetism*.—These currents were discovered by their magnetic power.

82. iii. *Chemical decomposition*.—I have made many endeavours to effect chemical decomposition by magneto-electricity, but unavailingly. In July last I received an anonymous letter (which has since been published) <sup>x</sup> describing a magneto-electric apparatus, by which the decomposition of water was effected. As the term " guarded points " is used, I suppose the apparatus to have been Wollaston's (63, etc.), in which case the results did not indicate polar electro-chemical decomposition. Signor Botto has recently published certain results which he has obtained; <sup>2</sup> but they are, as at present described, inconclusive. The apparatus he used was apparently that of Dr. Wollaston, which gives only fallacious indications (63, etc.). As magneto-electricity can produce sparks, it would be able to show the effects proper to this apparatus. The apparatus of M. Pixii already referred to (79), has however, in the hands of himself<sup>3</sup> and M. Hachette/ given decisive chemical results, so as to complete this link in the chain of evidence. Water was decomposed by it, and the oxygen and hydrogen obtained in separate tubes according to the law governing volta-electric and machine-electric decomposition.

83. iv. *Physiological effects*.—A frog was convulsed in the earliest experiments on these currents. The sensation upon the tongue, and the flash before the eyes, which I at first obtained only in a feeble degree, have been since exalted by more powerful apparatus, so as to become even disagreeable.

84. v. *Spark*.—The feeble spark which I first obtained with these currents has been varied and strengthened by Signori Nobili and Antinori, and others, so as to leave no doubt as to its identity with the common electric spark.

<sup>1</sup> *Loud, and Edinb. Phil. Mag. and Journ.* 1832, vol. i. p. 161.

<sup>2</sup> *Ibid.* 1832, vol. i. p. 441. <sup>3</sup> *Annales de Chimie*, ii. p. 77.

<sup>4</sup> *Ibid.* li. p. 72.